January 2019

EQUITY MARKET STRESS MONITOR

A Perspective on the Current Stability of Global Equity Markets

The Intech Equity Market Stress Monitor™ is a collection of five metrics we believe are reliable indicators of equity market stress based on Intech's 30-year history of studying volatility. You can use the monitor to gain insight to market risk regimes, contextualize beta risk management and complement your conventional risk metrics.

Executive Summary

- A highly volatile Q4 drove the U.S. equity markets into negative territory for the year after being up by more than 10% at the end of September. Non-U.S. developed and emerging markets posted double-digit losses for 2018. Last year marked the return of volatility. The number of daily return swings greater than 1% rose to 64 in 2018 from 8 in 2017 as measured on the S&P 500® Index. In 2018 we saw two corrections in the U.S. equity market (down by more than 10% from a recent peak), and it approached bear territory (down by 20%) on Christmas Eve.
- The Intech Equity Market Stress Monitor™ metrics across markets started the year at extreme levels which should be interpreted as signs of market instability and a possible precursor to substantial volatility. Throughout the year, we saw some of these risk metrics move closer to more normal levels. All this happened while equity markets experienced significantly higher levels of volatility.
- The unprecedented divergence in capital concentration between U.S. and non-U.S. developed markets continued in Q4, increasing in the U.S. with narrow leadership in large growth stocks while decreasing in other developed markets.
- Skewness of returns showed a clear divergence in trends between the U.S. and the rest of the world in 2018. After being in the top quintile level at the beginning of the year, the skewness of returns in the U.S. shifted to median levels toward the end of the year as investors reacted to news, balancing out return distributions. On the other hand, we saw an increase in the skewness of returns in the non-U.S. developed markets as measured on the MSCI EAFE Index. This difference in trends reflects an uncommon divergence in market sentiment.
- As we enter 2019, the risk metrics continue to exhibit signs of stress across many markets, albeit less extreme than a year ago. Today, the greatest stress is observed in European and Emerging Markets equity indexes.

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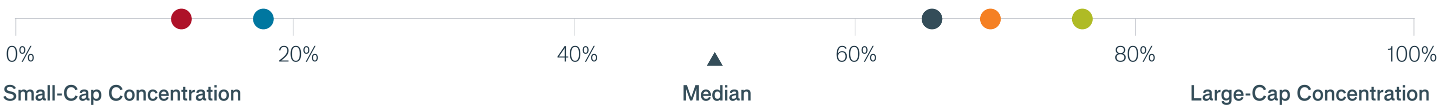
Intech Equity Market Stress Monitor Data as of 12/31/2018

We've identified a collection of risk metrics that we believe are reliable indicators of equity market stress. For each of these metrics, our observations have shown that when markets deviate substantially from typical levels, they eventually return to it. Moreover, the greater the deviation and persistency of extreme values across a larger collection of metrics, the more likely it is that the return to the mean will be abrupt, and accompanied by substantial volatility.

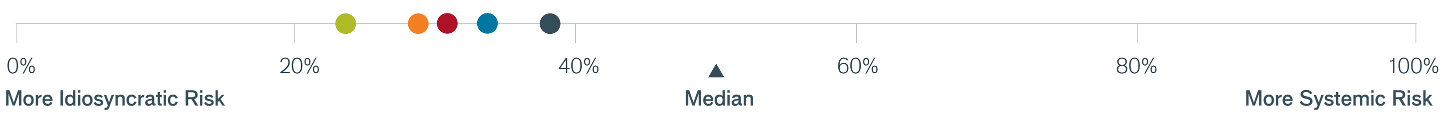
Capital Concentration

Do winners take all? Capital concentration measures how the capital is distributed between stocks within an index. An increase means that more capital is allocated to larger-cap stocks. A decrease indicates that capital is moving to smaller-cap stocks. Our research has shown that the capital distribution among stocks is remarkably stable over the long term and tends to revert to median levels.



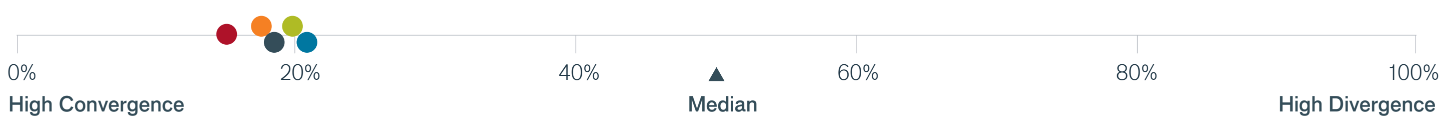
Correlation of Returns

How similar are stocks' absolute returns? Correlation measures the market-weighted average pair-wise correlation of stocks in the index. It quantifies the similarity of stocks' returns, as a fraction of their volatility. As correlations rise, stocks' returns tend to move in tandem with each other as the common component of return – the market – begins to dominate. As correlations decline, stocks' returns exhibit less similarity between stocks because idiosyncratic factors dominate the market component.



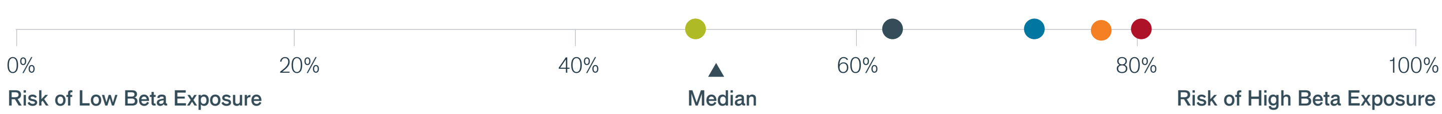
Dispersion of Returns

How different are stocks' relative returns? Also known as cross-sectional volatility, dispersion measures whether stocks' returns relative to their benchmark are converging (low dispersion) or diverging (high dispersion). As dispersion increases, underlying stock or portfolio returns begin to diverge from the overall benchmark. We find that the market eventually reverts to long-term levels when return dispersion is substantially low or high, which is associated with strain on the market.



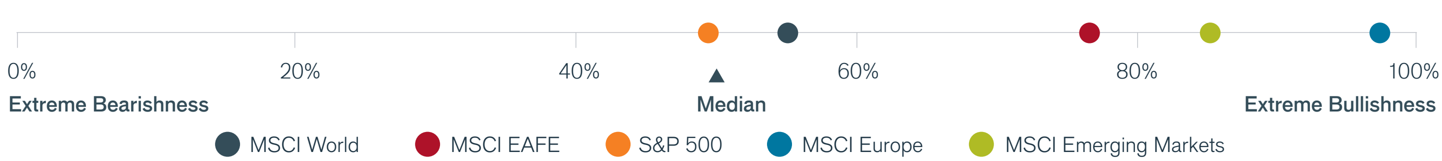
Index Efficiency

How much beta risk should you take? Market efficiency measures the level of index diversification versus the potential diversification available given the volatility characteristics of index constituents. Low market efficiency makes it possible for a skilled manager to achieve above-market outcomes with lower beta exposure, but the risk is lower upside capture potential. Conversely, high market efficiency means that reliably outperforming the index requires a manager to have similar beta risk, exposing a portfolio to higher downside capture.



Skewness of Returns

How fat are the tails? Skewness measures the asymmetry of index returns around the mean. Logarithmic returns tend to exhibit a left-skewed distribution, meaning the most extreme returns are below the mean, as investors tend to react more strongly to negative news. When there is irrational exuberance among investors, market returns tend to become less negatively or, even, positively skewed. Conversely, low levels of skewness often coincide with the market shock itself, and eventually manifest into positive outcomes as markets stabilize.



Regional Insight by Index

Global Equity Market – MSCI World Index℠

- Global developed equity markets entered the year with three of five risk metrics at extreme levels and near historic readings, an indication of strain in this market. By the end of the year only one metric remained at extreme levels as global equity markets experienced an increase in volatility during the year and our risk metrics returned to more typical levels.
- The largest changes observed during the year were in the correlation of returns and index efficiency metrics. Both measures changed by over 30 percentage points from historically low and high readings, respectively.
- Capital concentration increased in global markets during the year, largely attributable to the strong performance of some U.S. mega cap technology stocks. This is a continuation of an upward trend in concentration that began a little more than three years ago.

Non-U.S. Developed Equity Market – MSCI EAFE Index

- International equity markets continued to demonstrate strain during the year with three of five risk indicators still pointing to extreme levels by year-end.
- While they remain low relative to our historical observations, the correlation and dispersion of returns increased throughout the year. An increase in correlation is often consistent with an increase in market volatility.
- Capital concentration in international equity markets continued to decline during the year reflecting investors' continued preference for smaller-cap stocks over mega caps in this specific universe. This trend contrasts sharply with the increase in market concentration evident in the U.S. market.

U.S. Equity Market – S&P 500 Index

- U.S. equity markets entered the year with four of five risk metrics at extreme levels. Correlation and dispersion of returns were exhibiting extreme low levels while index efficiency and skewness of returns showed historical high readings. Throughout the year, these four risk measures moved closer to median levels while market volatility in the U.S. increased.
- As a continuation of a trend that started three years ago, the capital concentration increased throughout the year. The source of this increase in concentration was largely driven by investor's appetite for growth stocks, in particular some large cap technology stocks whose performance has been extremely strong over the past few years.
- The skewness of returns indicator decreased from near historically high levels starting in the second quarter. This indicator is now right at median level reflecting that market returns may be showing a more balanced distribution as investors' optimism tempered in the U.S.

European Equity Market - MSCI Europe Index

- The European equity market continues to be the region where we observe the greatest amount of strain. At the beginning of the year all risk metrics were at extreme levels compared to historical observations and today four of five are near extremes, a clear indication of potential instability in this market.
- Capital concentration declined slightly during the year and remains in the bottom quartile across all historical observations – a stark contrast from U.S. equity markets. This decline in capital concentration is a continuation of a trend that began over five years ago in this region.
- While the dispersion of returns metric still remains at extreme readings compared to historical observations, we observed a notable increase from historically low levels as volatility increased throughout the year.

Emerging Markets Equities – MSCI Emerging Markets Index

- A little more than a year ago, emerging markets were the segment demonstrating the most stability according to our metrics. However, this has been the segment that endured the biggest change in risk profile over the past year, with four of five indicators now at extreme levels.
- The only risk metric not at extreme readings is the index efficiency metric, which is currently close to median levels. However, this reading endured the largest change over the past year, declining from historically high values. While this change is a move toward more normal levels, the decline perhaps suggests a greater potential for active managers to achieve a better risk/reward trade-off in a market that is becoming less efficient.
- Capital concentration continued to increase during the year, reaching the upper quartile of all observations and the highest level observed since 2007. Less than two years ago this reading was at some of the lowest levels observed historically.

Intech Equity Market Stress Monitor

Intech® is a specialized global asset management firm that harnesses stock price volatility as a source of excess return and a key to risk control. Founded in 1987 in Princeton, NJ, by pioneering mathematician Dr. E. Robert Fernholz, Intech serves institutional investors across five continents, delivering relative return, low volatility, adaptive volatility and absolute return investment solutions.

For more information, please visit **janushenderson.com.**

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Intech is a Janus Henderson subsidiary and subadvisor that uses a mathematical investment process to harness stock price volatility as a source of excess return and a key to risk control.